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REVISION AND ADMINISTRATION OF THE BUILDING CODE

*How can a city adopt and maintain effective building regulations in relation to zoning and other codes?
What are the sources for further help on code revision?*

The importance of sound building regulation to the economic and physical condition of cities is now apparent to most citizens interested in their community. This importance has been underscored by the federal government which requires a city to have an enforcement program for its building code (among several codes) before it can qualify for matching funds for urban renewal. To be sound, a building code and its related ordinances and regulations, must reflect the introduction of new and useful methods and materials, the experience of building officials in applying existing rules, and the changing requirements of individual communities.

This report discusses the purposes and problems of building code revision and the procedures a city may use to develop the modern and effective inspection and enforcement necessary for good code administration.

Regulation of building construction for the protection of the public is by no means a new concept of governmental responsibility. The enactment and administration of such laws by local governments, however, is confined generally to cities in the United States. In most foreign countries building codes are enacted and administered by the national government. In Canada the national government has prepared a building code which is administered by municipal governments with little authority to adapt it to local conditions.

In the United States, for many years, only the larger cities had building regulations. As a consequence, some states enacted state building regulations to provide protection in certain uses for the public outside of those incorporated municipalities which had specific building regulations. Many states have retained such laws even though the need for them has greatly diminished. The nature of these state building code activities varies. In some states compliance with state laws is mandatory; state permits must be obtained and inspection by the state is required. In others, the state code is advisory and administration is delegated to local governments, sometimes on a mandatory basis and sometimes at the discretion of local authorities.

For many years building regulations were not needed in the smaller communities. Now, however, the mass production of homes, the manner of constructing large shopping areas, and the migration of factories to smaller communities where large tracts of land are available, make the establishment of building regulations a necessity in every incorporated community.

Development of Building Regulations

The earliest attempts to regulate building construction in the United States followed the general pattern of regulations in England and France. Little has been recorded about the details of regulations, although it is known that such regulations existed in one form or another in the early colonies. There is no specific record of the first city in this country to enact and enforce a building code, but the buildings still standing in many of the older cities of the country bear evidence of some kind of government control of their construction.

Early in the present century the insurance industry compiled a set of standards for construction designed to reduce fire loss. This was, in effect, a set of specifications based upon observance

of structural elements that had withstood severe fire exposure without collapse. No factual information was then available to indicate the magnitude of the exposure or the possible extent of resistance of the construction, consequently many of the specifications required far more substantial, and hence more costly, construction than now known to be necessary.

For want of a better guide, municipal governments sometimes enacted these standards into laws to provide for fire protection in buildings within their jurisdictions. In time this became known as the "National Building Code" issued by the National Board of Fire Underwriters. Through the years these standards, or "codes," have been changed and modified on the basis of research in the construction industry, but they still reflect the major interest of the authoring agency -- the reduction of property loss from fire.

When the country was predominately rural in character and buildings were well separated, little need for building regulations existed except in larger communities. But in the last 10 years the United States has been transformed to an urban country. With this transition has arisen a need for building regulations in every community.¹

Specifications Codes. During this transition period municipal governments were obliged to prepare their own building codes and related ordinances using local voluntary technical, professional, and legal talent. No other course was readily available. One community borrowed from another, adding the variations its advisors thought desirable. Building codes prepared by these methods were more a compilation of individual opinions on good construction than sound minimum safety regulations. Many were master architectural and engineering specifications which, although reasonably sound as such, often required far more costly construction than necessary for safety. They almost invariably reflected the prejudices of their authors and pressures from local interests. Sometimes they were based on biased information supplied by vested interests and used by the committee for want of something better suited in their opinion.

These were rigid specification codes that identified the materials to be used and described the methods by which they were to be combined. They frequently specified thicknesses and detailed attachment requirements leaving no basis for alternate materials or methods. As a consequence the public was frequently denied the use of new materials and construction techniques, even though they were as good as, or better than, those specified in the code. To amend this type of code required the preparation and adoption of comprehensive specifications for each new material or method; a task so formidable that it was seldom undertaken except under excessive pressure. Such materials as gypsum board, fibre insulation board, plywood, and the host of plastics products now available were not permitted unless specifically referred to in the codes with detailed specifications for their use.

While this type of code was being developed, much research was being carried on by organizations which recognized that the use of architectural, engineering, and legal talent in code writing was wasteful of those talents and was producing over-all confusion and unsatisfactory results. Out of this research, factual data were compiled for standards of engineering practice, material correlation, and scientific evaluation of the performance of materials and of methods of combining them.

The review and coordination of these data, however, was too time-consuming a task to be undertaken by each community under the voluntary procedures formerly employed. Most architects, engineers, and attorneys were familiar with only a few of the standards involved. Because they had no occasion to investigate the system by which these data were compiled, they did not fully appreciate the value of them or understand their proper use in regulations made mandatory by law.

Several attempts were made by standards sponsoring organizations to develop building code requirements for segments of the construction industry. It was thought that local communities could combine such of these code sections as they needed to produce a complete set of building regulations. This worked well as long as it was limited to consideration of the interests of individual branches of the industry such as masonry, concrete, and steel. It had two inherent weaknesses, however.

¹The terms "city" and "community" are used interchangeably in this report for the governmental jurisdiction administering the building code, but the report applies equally well to counties and other local governments with code responsibilities.

First, each of the industries desired the insertion of requirements that were not related to safety, but were designed to uphold the voluntary standards of the industry; second, since each of the code sections was developed by separate committees, difficulty was encountered in trying to combine them because of conflicting language and a certain amount of overlapping, especially in code administration. The system proved thoroughly impractical, moreover, in developing requirements that involved the conflicting interests of several branches of the construction industry in requirements for fire protection and similar over-all regulations.

This method of approach resulted in several basic problems with building codes:

1. It produced more restrictive requirements than necessary to produce safety.
2. The requirements were cumbersome to keep up to date with changing materials and technology and therefore became obsolete.
3. It resulted in widely varying requirements in the codes of adjoining communities.

Performance Codes. To overcome these conditions the building code must be free from personal prejudices; must not favor any commercial interest over another; and must provide minimum requirements for safety without imposing unnecessary regulation. It should be sufficiently broad to permit the use of materials and methods that can be proven adequate for the purposes for which they are intended, without having to amend the code to provide for each new set of conditions. To accomplish this, the code should prescribe only the *purpose* to be accomplished, not the specific materials or methods to be used.

The performance code, which accepts materials and component assemblies on the merits of their proven ability to accomplish the purposes for which they are used, is needed if the public is to be allowed the advantages of the vast research and development maintained by industry. But the preparation of performance codes is far too complex to be entrusted to persons unfamiliar with the ramifications involved. The exceedingly limited demand for consultants in this field makes it impossible to find competent individuals specializing in code drafting. Training in the architectural and engineering professions does not include the fundamentals involved in building regulations. As a consequence, performance building codes cannot be produced by each community under the methods formerly used by local governments which entrusted the writing of the code to voluntary citizens' committees.

Recognizing the need of local governments for assistance in preparing building codes, several organizations representing the public officials who administer such regulations have prepared building codes which may be adopted by those governments in preference to writing their own independent codes. The first of the organizations which published a building code was then primarily active in the western and mountain states. Its code, known as the *Uniform Building Code*, was first published in 1926. In 1945 the *Southern Standard Building Code* was issued by an organization formed several years earlier, in answer to the need for a building code by a number of communities in the South.

The Building Officials Conference of America, founded in 1915, had participated in the earlier standardization attempts by working with the standards organizations in an effort to produce requirements for the various segments of the construction industry until it became evident that that would not produce the desired results. In 1944, when a survey by the National Bureau of Standards showed that there were some 2,200 varying building codes in the country, this organization initiated a building code program which resulted in the publication of its *Basic Building Code* and companion *Abridged Building Code* in 1950. Before undertaking the preparation of another building code, this organization carefully studied the codes then in existence and found that each of them reflected definite regional influences or the particular interests of the sponsoring organization and, therefore, were not suitable for the needs evidenced by the survey of the National Bureau of Standards. As a result, and through a cooperative effort between the several codes and standards organizations, changes have been made in all of these codes so that now there is relatively substantial agreement between the technical requirements of the several codes, although they differ in format and some of them retain regional differences.

The organizations issuing these codes provide procedures to keep them up to date with developments in the construction industry as a service to those communities which adopt them. These

procedures provide for review of changes proposed by many sources, especially committees of officials familiar with the problems involved. Open discussion and arguments for and against are held before final disposition is determined by majority vote of public officials in open meetings of the organizations. This democratic procedure results in thorough study of each change and provides the most competent advice available.

Procedure for Review of Building Codes

Because building codes and related laws restrict property rights, it is important that the public be fully informed of the advantages of such legislation before it is adopted. An enlightened public can be a strong force in support of the adoption of modern codes. On the other hand, an uninformed public is likely to judge such legislation on the basis of isolated personal experience which often has resulted in the individual having been prohibited from doing as he wished.

Where there has previously been no building code, or where an independent and perhaps restrictive code has been in force, prejudices may have been established and become so deep-seated that they are difficult to overcome. These conditions are best dealt with through activities at the local level. Further, enactment and administration of building codes and related laws by local governments minimizes the danger of inequities resulting from the remote control of state-administered regulations.

In considering the up-dating or replacement of an existing building code, the best practice is to repeal the existing code and replace it with the selected recognized code which may be adopted as it is published or with such local amendments as may be absolutely necessary to adopt it to local administrative organization or unusual conditions. This is doubly advisable because mixing an independent code with one developed by a code organization is almost certain to result in conflicts. In addition, one of the major advantages of using the organization's code is to take *advantage of the correlative services offered with the code.* (See concluding section of this report, "Where To Get Help.")

The desirable procedure for initiating and executing building code reform will vary according to local conditions. In large communities these procedures will be more detailed than in smaller communities. The following, therefore, represents conditions which may be encountered in typical circumstances; adaptation of these conditions will be necessary in most cases:

1. All persons with a legitimate concern in the proposed code should be informed and have an opportunity to comment. The aid of the press should be obtained to present the need for sound, minimum building regulations and to publicize the benefits of such regulations.
2. Small communities may carry out a code program through their city councils. In larger communities, it is usually desirable to organize a committee for this purpose. All local interests concerned with construction and good government should be represented on such a committee. Members of the committee should be representatives of recognized groups, but should not include individuals who may have personal benefits or preferential interests to promote. The building official and a member of the legislative body or legal counsel should be ex officio members.
3. A task force or subcommittee should be appointed to recommend the codes to be used and, after acceptance of this by the full committee, to determine what modifications, if any, should be considered. The latest edition of the selected code, with the latest available approved changes should be used. This task force should consist mainly of representatives of the construction industry. The building official should be an ex officio member.
4. When the proper code is selected, and this has been cleared with the full committee, the task force should determine if changes are necessary to adapt it to peculiar local administrative requirements and geographic or climatic conditions. The greatest benefits are obtained by keeping local changes to an absolute minimum.

Personal opinion or individual experience is not a sound reason for a local change in the code selected. Unless there is unquestionable local experience and sound factual data to justify the change, it is better to leave the code as it is published until experience shows that a change is

needed. Every proposed change must be thoroughly examined to be sure it will not produce preferential considerations or conflicting requirements. It is desirable for the task force to consult with the organization sponsoring the code on the suitability of proposed local changes.

5. When the review is completed, the code with proposed local changes should be submitted to the entire committee. Public hearings should be arranged and representatives of organized groups should secure endorsement by their groups or comments on the proposed code. Comments should be referred to the task force for study to determine if they are justifiable. Before presenting the code for adoption the committee should inquire of the sponsoring organization about the latest available changes to be sure they are incorporated.

6. When substantial agreement has been reached in the committee, the proposed code should be introduced for consideration and adoption. Resolutions by participating groups endorsing the code should be filed with the city council.

In the study, review, and enactment of the building code the purpose of government regulations must be kept constantly in mind by all who are concerned in the activity. This purpose is to provide for the safety of the public and to secure the greatest common good of the community without prejudice or unnecessary regulation. Any proposed regulation which will not meet the test of these purposes should be rejected. Much injustice has resulted from failure to observe these principles: sometimes through the influence of personal prejudices of individuals; sometimes by consideration of specific interests; sometimes by the incorporation into the law of requirements based solely on local craft practices resulting from years of static methods or industry preferences. As desirable as many of these requirements may seem, they should not be made mandatory by law unless they are necessary to secure the purposes of the law.

Adopting the Building Code

The adoption of technical codes by municipal governments is accomplished under authority granted by state statutes. This authority differs from state to state and is sometimes different for classes of municipalities within a state. Some states have enacted enabling legislation directly permitting local governments to adopt technical codes by reference. In other states this authority is limited to codes promulgated or endorsed by some state agency or bureau. In still others there is no reference to adoption by reference.

Generally those who question the adoption of technical codes by reference contend that the adoption is not legal unless the code is published in full in the local newspaper. The principle involved is that citizens be fully informed of the proposed acts of their legislative bodies and the laws or ordinances which they adopt. In many cases this takes the form of a statutory requirement that ordinances proposed for adoption must be published a specified number of times in a local paper before being final adoption. This has been interpreted by some as requiring publication of the full text of any ordinance or code in detail. Others have contended that the publication of notice of intent to adopt an ordinance or code satisfies the requirements of the statutes provided the full text of the ordinance or code is available to any who may be interested in reviewing it.

Technically, if the method of adoption does not conform to applicable state statutes it may be declared invalid if challenged in the courts. It is argued that anyone being aggrieved by a requirement of the code or by the ruling of the administrative official might institute action to have the law declared unconstitutional or illegal. Such action, however, is extremely rare for a number of practical reasons.

As a practical consideration it is not economically feasible to publish the full detail of a building code in the local press at applicable advertising rates. Nor is such publication always successful in producing the intended result. Experience shows that in most states building codes can be adopted by reference even if there are not direct state enabling laws spelling out procedures for this. Whether or not state enabling legislation exists, the following four simple rules should be carefully observed in the adoption of any code by reference:

1. The code should be clearly identified by title, author, and date of issue.

2. The adopting ordinance should be processed by the city council and published as prescribed by state law.
3. Copies of the code and all proposed local amendments should be available in the city hall for public review prior to adoption and should remain there after the effective date of the ordinance.
4. The city council should retain exclusive control of subsequent amendments to the code.

Maintaining the Code Locally

The organizations which sponsor the available building codes process changes in them annually. These changes, however, do not become effective until they are adopted by the local legislative body as amendments to the code within that jurisdiction. To obtain the full benefits of the activities of these organizations, and to maintain up-to-date local regulations permitting the public the advantage of the vast research and development carried on by industry, it is necessary for the city to annually review the changes approved by the organization maintaining the code that has been adopted. This should be done as soon as practicable after the approved changes have been published.

The adoption of these changes is accomplished in the same manner as the initial adoption of the code except that review may be done by an appropriate board or committee within the government instead of by an outside committee. In some cities or other jurisdictions where codes are adopted, a permanent building code commission has been established for this purpose. This commission may be established by the building code or by separate ordinance; the latter is preferable. The commission should be composed of representatives of organized interests in the construction field with at least one member at large. Qualifications of members and length of term should be established. Terms should overlap to provide for continuity. The method of appointment should be included in the ordinance, and the extent of authority should be clearly defined.

The building code commission should not have authority to alter or amend the code. It should have authority to approve rules that might be issued by the administrative official under the authority granted by the code to fix the minimum safe practice for application of the code requirements. The commission also should review proposed changes in the code and recommend action to the city council. The commission may serve as a board of appeals, as established in the code, to review individual cases where it is alleged that there has been error in any ruling by the administrative official or that hardship would result from application of the requirements of the code. In this capacity, the authority of the commission should be specifically defined. Conversely, the board of appeals, established by the building code, may be delegated the authority to review proposed changes and make recommendations for their disposition and for the other functions herein described for the building code commission.

Related Laws and Ordinances

Complete regulation for health, safety, and general community welfare requires other laws and ordinances in addition to the building code. Proper relation must be maintained between these to avoid overlapping and confusion. Thus it is helpful to understand the functions of these laws and their relation to building regulations.

Zoning. The zoning ordinance regulates land use by districts within the municipal limits and building use and density. Although the zoning ordinance and building code may contain regulations governing the same conditions, and although there may be differences in these requirements, there is not necessarily a conflict, because each establishes control for a different purpose. Each therefore applies, in any individual case, to the conditions which it controls.

For example, both the zoning ordinance and the building code may establish minimum width for side yards. The purpose of side yard width requirements in the zoning ordinance is to regulate density of land use. The purpose of side yard width requirements in the building code is to provide adequate space for light and ventilation and to regulate the required fire resistance of exterior walls. Where the side yard serves both purposes, i.e., to limit density of land use and to supply open space to permit light and ventilation through windows opening thereon, it must comply with the requirements

of both the zoning ordinance and building code. If the requirements of one are more severe (requiring greater width of side yard) than the other, those requirements will control, since both must be complied with.

Fire Limits. The fire district, or the area within prescribed fire limits, is the territory defined and limited by the provisions of the building code for the restriction of types of construction.² The purpose of the fire district is to minimize as much as possible the danger of conflagration in those areas within the municipality where buildings are permitted to be built to common property lines and where there is high concentrations of value in buildings, merchandise, and commerce. The building code imposes certain special limitations on buildings located in fire districts or within established fire limits. Generally, frame buildings are prohibited or severely limited, and the more fire-resistive types of construction are required. Certain building uses, classified as high hazard uses, may also be prohibited.

It is generally considered the best practice to establish fire limits by a separate ordinance rather than as a part of the building code. They should be described by metes and bounds, referring to street boundary lines. The fire limits should include all closely built districts of predominantly business or commercial occupancy and should extend approximately 200 feet beyond those districts, including areas in which there is a definite trend toward business or commercial development. A closely built district is generally considered to be one in which 50 per cent or more of the ground area is built upon and 50 per cent or more the area built on is used for commercial occupancy. Any area consisting of two or more adjoining blocks or part blocks having a total combined area of 100,000 square feet or more, not including the area of streets, warrants the establishment of fire limits.

In very large cities it is sometimes desirable to establish two fire districts, providing an inner and outer zone. When this is done, the building code provides less restrictive requirements for the outer area, usually identified as "fire district No. 2"; the inner area being designated "fire district No. 1."

As a general rule, any area devoted to heavy manufacturing should not be included in the fire limits unless it is located in a district where the concentration of building creates conditions comparable to those found in the commercial areas, such as might result from manufacturing operations in loft buildings. The more severe limitations imposed by the building code on buildings within the fire limits would prohibit modern manufacturing buildings and would substantially increase the costs of construction, often without securing any appreciable benefits.

The establishment of fire districts requires careful study. Failure to include sufficient area within the fire limits may result in hazard to the community and penalty through increased insurance rates. Including more area than justifiable may impose unnecessary restriction and hardship on some property owners without providing any community advantage. If there is doubt about the area desirable to include in the fire limits, it is best to seek competent advice from municipal service organizations familiar with the problems involved.

Plumbing, Heating, and Electrical Codes. Most building codes include some reference to requirements governing the installation of the sanitary and service equipment required for the satisfactory use of buildings. Frequently those requirements refer to nationally recognized standards or specialty codes governing the several crafts. This reference may require compliance with these standards or codes or may designate them as acceptable standards, fixing the conditions which must be complied with. Most prominent among the standards or codes referred to are the "National Plumbing Code" and the "National Electrical Code."

Housing Code. The housing code applies primarily to residential buildings which were built under former regulations that required different and frequently lesser standards of sanitation, living conditions, and exit facilities than required by modern building codes, and to buildings converted from commercial to residential use or from single-family to multifamily use. It is the general purpose of the housing code to upgrade the standards of living in existing dwellings.

²"Fire districts" as referred to in the building code are not to be confused with "fire protection districts" found in some parts of the country, where the fire fighting organization may be a quasi-municipal entity having certain taxing powers and frequently encompassing several municipal jurisdictions or parts thereof.

While the building code fixes the requirements for light, ventilation, minimum room size and height, sanitary facilities, and so on for new buildings according to modern concepts and standards of living, serious hardship might result in applying these same requirements to buildings formerly built or altered under different regulations. There is likely to be a difference, therefore, between requirements for similar conditions in the housing code and the building code. This does not create a conflict, however, since each has its particular and proper application.

Because the housing code and building code deal with similar matters, there is justification in placing the enforcement of the housing code under the general supervision of the building official, but this should be a separate division from the enforcement of building regulations. There is further advantage in this since in many cases application of the requirements of the housing code results in alteration work coming within the requirements of the building code.

For example, when the necessary extent of repairs or alterations to an existing building have been determined by applying the requirements of the housing code, the actual physical work of making those alterations — whether they involve structural changes, improvements of exit facilities, installation of sanitary facilities, or heating or electrical systems — must be done in accordance with applicable requirements of the building code.³

Fire Prevention Ordinance. The fire prevention ordinance is intended to provide the necessary authority for preventing fires in buildings planned, equipped, and constructed under the building code. One function is to authorize the appropriate municipal official, usually the fire marshal, to enter buildings to make periodic inspections, to determine that safety facilities are maintained in safe working order, and to check that hazardous conditions are kept under proper control.

As a result of failure to clearly define the division of functions between the building department and fire department in the past, certain jurisdictional prejudices have arisen in some communities over the extent of the fire prevention ordinance. This was brought about originally by certain deficiencies in a "model" building code offered to local communities by one of the major industries. Supplemental requirements were needed because this code did not include requirements governing the installation of certain systems for the storage and use of volatile flammable liquids, first aid fire extinguishment equipment, and similar safety measures. These were placed in a model fire prevention code with the enforcement assigned to the fire prevention authorities.

As a result of the experience of many communities under this divided authority it is now recognized that the regulations governing the design and installation of all systems normally installed as a part of the construction of a building should be included in the building code and under the jurisdiction of the department enforcing this code. For example, the installation of gasoline storage tanks and the piping to the building and pump locations in filling stations; the installation of the oil tank and piping for the oil-fired heating system of a residence; the installation of standpipes, sprinkler systems, and fire extinguishers, all normally a part of the design and construction of buildings should be controlled by the building code.

The fire prevention code should also control the handling and storage of volatile flammables in small quantities, as a part of the processes within a building, and similar hazards. In addition the fire prevention code should cover other matters of "housekeeping," such as maintaining exits free of obstruction and keeping fire doors closed where necessary or free of obstruction where subject to automatic operation.

Air Pollution Control. In small isolated communities the discharge of foreign matter into the air is relatively insignificant. With the growth of large metropolitan areas, however, where numerous communities border each other, the pollution of air from products of combustion, manufacturing processes, and sometimes the operation of automobiles, is becoming a greater health hazard. Air pollution control, which formerly was of concern only to the larger cities, is becoming of greater concern to smaller communities as well.

Since the greatest source of air pollution is the products of combustion, proper control of this

³For an extended treatment of organization for and enforcement of housing codes, see MIS Report No. 201, *Housing Regulations — Their Administration and Enforcement* (October, 1960).

problem is directly linked with the design and installation of heating systems and other fuel-consuming facilities. Building codes contain requirements for the safe installation of such equipment to minimize the hazards of fire, and for venting to remove the products of combustion, but they do not generally regulate the design of the equipment to control the discharge of foreign matter into the air.

The time to detect deficiencies that would contribute to unhealthful conditions in the community is before the permit for the installation of such equipment is issued. To complete the "supermarket" aspect of the building department, which is desirable for good service to the public, some provision should be made for reviewing the design of this equipment while the plans for a building are being reviewed for the issuance of a permit. In larger cities this may be handled by a separate department with proper liaison with the building department, but in many smaller communities air pollution control is under the jurisdiction of the building department where the necessary close correlation of review may be accomplished with the greatest expedition and with the minimum inconvenience to the public.

Effective air pollution control requires certain inspections and investigations which are discussed below. It also requires close coordination with the local health department which may be charged with responsibilities for sampling the air and analyzing it to determine the extent of harmful foreign matter.

Civil Defense. While civil defense is largely accepted as a citizens' volunteer activity, the building official is in position to add substantially to the community program because of his knowledge of the construction of existing buildings. Where ordinances are passed to activate a civil defense program, cognizance should be taken of this knowledge and experience, and the necessary authorization for his effective participation should be spelled out.

Organization and Administration

The required administrative organization will vary according to the size of the municipality and the character and volume of construction involved. In very large cities the functions of the titular head of what is commonly called the building department are chiefly administrative with responsibility for the details of operation of the department delegated to chiefs of several divisions of the department. In medium-sized communities the titular head of the department may assume some of the responsibilities of the division chiefs; in the smaller communities he may perform some of the more important functions of plan examination, issuance of permits, and so on.

In many small cities one or two persons may handle all of the functions of administration, plan examination, permit issue, inspection, and enforcement. A more desirable solution, however, may be a part-time administrator who will take care of public contact regarding application of requirements, plan examination, permits, and prosecution, with field inspectors who take care of inspections.

Regardless of the administrative organization, the chief building official frequently makes final decisions on matters dealing with technical requirements. He should be chosen, therefore, for his ability, training, and experience in the construction field. Wherever possible, he should be a registered architect or construction engineer; in smaller communities, where most construction is of ordinary design and complicated engineering construction is the exception, one with practical knowledge and experience may well handle the work.

Inspections. Small as well as large communities are encountering complex problems of providing well-rounded inspectional services. Most of the inspectional programs — building, plumbing, electrical, fire, and the like — have been provided for many years; others, especially housing and air pollution, are relatively new and are products of increasing urbanization. The great variety of inspectional programs which must be provided even in the smallest cities presents a number of problems in direction, coordination, control, review, and evaluation. There are many possibilities for interdepartmental conflicts among building, health, and fire inspectors. The increasing specialization of inspections, especially on the simpler kinds of construction, brings higher costs without a return in better and more effective service. Multiple inspections make it more difficult for contractors and members of the general public to comply with all of the regulations.

To meet this problem many cities in recent years have attempted partial or full consolidation of inspectional activities. Where partial consolidation has been undertaken, the exceptions usually have been technical inspections in the fields of health and fire. Such consolidations have not been made easily. Department heads and supervisors are bound by tradition and are skeptical of efforts to coordinate varying and different kinds of inspections. Consolidation of building, electrical, and plumbing installations meets strong opposition from building trade unions, and sometimes from contractor groups. Despite these obstacles consolidation has taken place in some of the larger jurisdictions, including Tucson, Arizona; Tacoma, Washington; Kansas City, Missouri; and Arlington County, Virginia. Other jurisdictions have trained inspectors to perform various kinds of inspections. Los Angeles County, California, for example, has had building inspectors perform combined building, electrical, and plumbing inspection work. As a general inspector he is expected to handle the routine in all three areas. When he encounters a difficult problem he notifies his supervisor, and the appropriate specialist is sent to the job to handle any further work. The specialist may be in architecture, structural engineering, plumbing, or electrical work. In smaller cities where only one or two inspectors are needed the generalized inspector is more common.

In any case, as a matter of organization and administration, the building inspection program should be considered in relation to all other inspectional programs — plumbing, electrical, elevator, heating and ventilation, air pollution, fire, and housing and urban renewal. More important than consolidation is an appreciation of the problems of each of the inspectional fields and efforts to work cooperatively on all inspectional programs.⁴

Inspection practices will differ in various communities. Some large cities have found it desirable to divide the area into districts, assigning inspectors to a specific district. In some of these cities district inspection offices have been established, headed by deputy chief inspectors.

Where field inspectors are assigned to specific districts it is sometimes the practice to shift them from one district to another periodically. While this practice has some advantage in discouraging collusion between inspectors and contractors, it has many disadvantages. Not the least of these is the problems which arise in changing inspectors during the progress of any individual project.

The method of determining the time for inspections on any project also differs from city to city. Some cities successfully use "called inspections" in which the builder is obliged to request inspection at specified intervals in the progress of the construction, by telephoning the inspection office or mailing a postal card to request a specified time in advance. Other jurisdictions find it more satisfactory to leave it to the inspector to keep track of the progress of the construction and to make the necessary inspections. In communities in which the construction is predominantly one- and two-family development, and for such construction in larger communities, the "called inspection" method has some advantages. The method to be followed should be determined by the building official according to conditions involved and the enforcement organization. When the "called inspection" procedure is used, the responsibility of the holder of a permit to call for inspections must be clearly defined and the specific stages of the project when inspections are required must be clearly identified.

Inspectors should be required to make careful notes of all conditions found on each inspection and to include these with inspection reports. This is especially important in cases where there are violations of code requirements and enforcement necessitates prosecution and court action. All field inspection reports should be signed by the inspector who made them and should be a permanent part of the records of the construction of the building to which they refer.

Enforcement. Securing compliance with codes and bringing offenders to justice will vary according to the administrative organization of the government. Frequently this is controlled by state statutes. It should be remembered, however, that the purpose of building codes and related laws is to secure safety to the public. The primary function of the administration of those laws is

⁴For further information on organization and management of building and related codes, see Institute for Training in Municipal Administration, *Municipal Public Works Administration* (Chicago: International City Managers' Association, fifth edition, 1957), Chapter 15, "Inspectional Services."

to secure compliance, rather than to punish offenders. Prosecution and punishment, therefore, should be employed only as a last resort, and then only as a means of securing compliance. Imposing a fine or imprisoning one who has refused to comply with the safety requirements of the code is not a substitute for correction of the conditions constituting the violation.

With this as the fundamental principle of enforcement, efforts should be made to forestall infractions wherever possible. Where failure to comply with the code is found, effort should be made to secure compliance through notices and conferences with the offender. The inspector should include all such cases in his reports and should note the conclusions and corrections.

When it is necessary to issue a formal notice of violation, this should be done in accordance with the enforcement procedures established in the code or by administrative policy of the government. Unless there is imminent danger, or need for immediate corrective action, it is frequently the best practice to require an interview with the permit holder to explain the nature of the violation. If this is ignored, it is desirable to issue a notice fixing a time within which the permit holder is required to come to the office to show cause why he should not be prosecuted for failure to comply with the requirements of the code and the order to correct violations. If this is not complied with, a prosecution warning should be issued advising that a warrant will be sought if steps are not taken to correct the violation by a specified date.

If this warning is ignored a reinspection should be made on the specified date to verify that the violation still exists. It is good practice for this inspection to be made by the inspector in charge and his supervisor or the chief inspector of his section or district. It may also be desirable to have a representative of the legal department of the government accompany the inspectors making this inspection. The conditions found should be carefully recorded and the nature of the violation clearly defined in the inspection report which should be signed by all who participated in the inspection. On the basis of this report a warrant for the arrest of the offender should be obtained under the direction of the legal counsel and delivered to the proper authorities to be served.

If the nature of the violation is such that it presents imminent danger to workmen, the public, or property adjoining the project; or if progress of the work would make correction of the violation impractical or perhaps impossible without tearing down subsequent construction, a "stop work order" should be issued as soon as the violation is discovered. The procedure before issuing a stop work order should be similar to that described for issuance of a warrant.

In-Service Training. The construction industry maintains a vast system of research and development resulting in constant introduction to the market of new materials and changes in techniques for using well-known materials. For satisfactory administration of building regulations, municipal government personnel must keep informed on these developments.

The key personnel of the building department should be authorized to attend meetings and training institutes to keep abreast of new developments and techniques. Provision should be made for chief administrative personnel to attend national meetings as well as regional and local meetings.

Training institutes for reviewing the basis for regulations and administrative authority are provided in some areas. Wherever possible, personnel should attend these institutes. In large cities it may be desirable to set up a training program in the department to acquaint field inspectors and plan examiners with the provisions of the code. An excellent outline for such a training program is found in the chapter on inspectional services of Municipal Public Works Administration.⁵

Where To Get Help

Codes. Several organizations issue and maintain building codes. In the order in which their codes were issued, these are:

National Board of Fire Underwriters, 85 John Street, New York 7. An organization of capital stock fire insurance companies. *National Building Code* issued about 1905 and revised periodically at the discretion of its engineering staff.

⁵Ibid.

International Conference of Building Officials (formerly Pacific Coast Building Officials Conference), 610 South Broadway, Los Angeles. An organization of building officials principally from the west coast and mountain states. *Uniform Building Code* issued about 1926 and revised annually through action of members at annual meeting.

Southern Building Code Congress, Brown-Marx Building, Birmingham, Alabama. An organization of building officials principally from the southern states. *Southern Standard Building Code* issued about 1946 and revised annually through action of members at annual meeting.

Building Officials Conference of America, Inc., 1525 East 53 Street, Chicago 15. An organization of building officials from the United States and Canada. *Basic Building Code* issued in 1950 and revised annually through action of members at annual conference.

Building Officials Conference of America. This nonprofit organization is affiliated with the group of organizations at 1313 East 60th Street, Chicago. It is the oldest of the organizations in the building field, having been founded in 1915. It is governed by a board of building officials from the United States and Canada. In addition to the principal membership of government officials, other classes of membership are provided, without voting privileges, to maintain close contact with all phases of the construction industry. Through these and many other connections the organization obtains information to maintain its codes up to date.

BOCA provides a *Basic Building Code* containing comprehensive regulations suitable for the needs of large jurisdictions, and an *Abridged Building Code* for those communities which are predominantly residential in character. These codes are made available to local governments without royalty or charge. They are kept up to date with industry research and development by the systematic review of requirements provided through study, public hearings, and open discussions before final approval. Recommended changes are made available in convenient form for adoption by local governments. A new edition of each code is issued every five years, incorporating all changes approved since the previous edition.

In support of these codes BOCA also provides a number of services:

1. Material Approvals. Factual reports of proven performance of trade-name building products or systems of construction to assist local officials in recognizing new materials or new methods of using well-known materials and identifying their proper installation.
2. Interpretations. Official explanation of the basis for and intent of specific sections of the codes and their proper application. These are issued only to local officials because they must be applied to any specific case with regard to contributing conditions which may vary.
3. Plan Examination. Local officials may submit building plans for review to determine compliance with code requirements as published — without consideration of modifications that may have been adopted by local governments. Plans are examined by qualified consultants, and a factual report is issued indicating changes in the plans that may be necessary to make them comply with the codes. Fees are charged for this service, based on the size of the project.
4. Consultation and Advisory Service. A service to assist local governments in defining their fundamental code problems and determining a workable program for solving them. A BOCA staff member or representative will meet with officials, committees, or organizations to survey local conditions, to review special considerations that should have a bearing on building regulations, and to suggest procedures for establishing a building code program for the community. A per diem charge is made based on actual time spent in the community.
5. Other Services. BOCA holds an annual conference; participates in regional, state, and local meetings of building officials to bring them the latest information in their field; maintains an extensive reference file on building regulations, administration, and construction problems; and publishes bulletins and periodicals.

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